Approved by:		
T. Ludlam for S.D.		1/11/07
Physics Department Chair		Date
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Associate Lab Director for NPP		Date

Physics Department, BNL

ESSH Self-Evaluation

Department Summary

Fiscal Year 2006

Self-Evaluation - Overview

The Physics Department's Self-Evaluation for FY 2006 is based on a Self-Assessment Plan that assesses the Department's performance against the Laboratory's Critical Outcomes.

The three Critical Outcomes for this year are in the areas of ***Basic Science and Technology***, ***Environmental Management***, **and** ***Laboratory Management and Operations***. Each has a number of objectives and performance measures linked to those objectives. The Department assesses the elements that are relevant to its internal strategic plans, operations, and objectives, with the goal of enhancing the performance of the Physics Department and contributing to meeting or exceeding its part for the Critical Outcomes of the Laboratory.

At the heart of this strong program of self-evaluation is the strong management commitment to ESSH, our Tier I Program, Experimental Safety Review Process, Environmental Management System, and our proactive ESSH Committee.

Critical Outcome – Basic Science and Technology

The Physics Department recognizes that a commitment to excellence in science and technology requires an equal commitment to the environment, worker and infrastructure safety, and health. The Department's management exploits every opportunity to remind its people of their responsibilities to themselves, each other, and the Department. It does this through the Department–specific briefing, Experimental Safety Reviews (ESRs), Training, Department communications i.e. Department meetings, and electronic messages, and the use of R2A2s.

Critical Outcome – Environmental Management

The Physics Department has disposed of nearly all legacy items. Those that remain have been reported to laboratory management and are being properly managed. The remainder of the Department's commitment to the environment consists of Environmental Management System for identifying hazards, ESRs for controlling them and our Tier I and other inspections for monitoring them.

Critical Outcome – Laboratory Management and Operations

The Department used all the applicable BNL Management Systems in handling ESSH matters in the Department. Specifically, these included the Environmental Management System (EMS), Integrated Safety Management, (ISM), the Brookhaven Training Management System (BTMS), and the Standards Based Management System (SBMS) for the subject areas that govern our operations.

Performance Measures for Brookhaven National Laboratory as established between the Department of Energy (DOE) and Brookhaven Science Associates (BSA)

There are eight performance measures that have been established. The Physics Department helps the Laboratory achieve its institutional goals by contributing at the departmental level to those measures that are applicable to the Department. Some performance goals are truly institutional and are not evaluated at the Department level.

Performance Measure 1.0 – Provide for Efficient and Effective Mission Accomplishment

The Physics Department continues to do its part in achieving 'World Class Science'. Our discoveries and publications, recognition of our excellent scientists through awards and support, continues to bring recognition to BNL.

Physics Department scientists are internationally recognized leaders in their fields. They participate in developing new science initiatives at BNL and also participate in scientific endeavors at other facilities world-wide and in establishing direction with their global counterparts for the next generation of initiatives and research tools.

Performance Measure 2.0 – Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities

The Physics Department provides the expertise for design, fabrication, and construction of the major detectors for RHIC. These plans are reviewed at the laboratory level and with the DOE to ensure their effectiveness and efficiency. The funding received to accomplish these reflects the confidence of the DOE developed through the past projects we have been successful with.

The Physics Department operates the Accelerator Test Facility (ATF), a proposal-driven Program-Committee-reviewed Users'-Facility dedicated for long-term R&D in Physics of Beams. ATF users, from universities, national labs and industries, are carrying out R&D on Advanced Accelerator Physics and are studying the interactions of high power electromagnetic radiation and high brightness electron beams, including laser acceleration of electrons and Free-Electron Lasers. Other topics include the development of electron beams with extremely high brightness, photo-injectors, electron beam and radiation diagnostics and computer controls.

Operations at the ATF are reviewed annually by the Department and the DOE. DOE and Laboratory approvals for the upgrades, operations, and new capabilities demonstrate continued commitment to this facility for its remarkable achievements.

Performance Measure 3.0 – Provide Effective and Efficient Science and Technology Program Management

The Physics Department accomplishes this in partnership with the Laboratory management. The Laboratory Director, Deputy Director for Science and Technology, Deputy Director for Operations, the Associate Director for Nuclear and Particle Physics, the Associate Director for Policy and Strategic Planning work with the Physics Department Chair and Associate Chairs to achieve this measure.

The Department works with Laboratory Management to develop new programs aligned with the DOE Mission and the scientific strengths of the Laboratory and participates in major projects at other laboratories world-wide. These programs are always well received by our scientific partners and reviewers, globally, demonstrating the excellence of our personnel and programs. The ability to get funding for some of these underscores their relevance to both the scientific community and the DOE.

Projects that have been previously approved and funded in prior years receive continued funding attesting to their effectiveness and efficiency. These projects undergo rigorous annual reviews internally and externally.

Performance Measure 4.0 – Provide Sound and Competent Leadership and Stewardship of the Laboratory

The Physics Department's Chair and Associate Chairs assist the laboratory in achieving this measure by ensuring that Group Leaders and scientists are globally recognized as leaders in their fields. Additionally, the support personnel are chosen and retained for their demonstration of their quality of performance in supporting their leaders and commitment to excellence in stewardship of the Departments programs and assets.

Performance Measure 5.0 – sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environment Protection

The Physics Department continues to provide a work environment that protects workers and the environment. The Department strives to keep its DART rate below the Laboratory average and below the DOE Office of Science expectation of 0.35 cases per 200,000 hours worked. We also work to keep our OSHA total recordable case rate below the laboratory average and below the Office of Science interim goal of 0.87 cases per 200,000 hours worked.

The Physics Department integrates ESSH into its policies and procedures providing a management system that enhances the safety and well-being of our personnel and the environment. We meet all the requirements established by the Laboratory and in addition have instituted proactive measures to control or eliminate risks. By measuring our own performance and soliciting feedback through our Group Safety Coordinators and Department members we can continuously improve that performance.

The Department is participating in the Laboratory's Human Performance initiative and has already implemented some elements into our programs. The Physics Department will ensure worker, scientist and technician participation in hazards assessment, evaluation and mitigation at the "task level." Job Risk Assessments will be reviewed and updated as deemed appropriate.

The Physics Department has developed an accident/incident management program where all incidents and accidents other than first aid cases are investigated. First aid cases are reviewed by the Physics Department's Manager of ESSH&T Programs to see if an investigation is warranted. The Group Leader owning the accident or incident has the responsibility to perform the initial investigation. The ESSH Committee reviews and provides further investigation, if necessary, develops corrective actions and lessons learned which are subsequently shared with Group Safety Coordinators and the entire Department at an 'all-hands' meeting.

The Physics Department effectively manages its waste effectively and efficiently and participates in identifying 'Pollution Prevention' projects and 'Safety Solutions' projects. The Department has had success in attempts to find funding within these Laboratory programs but will also fund others on its own.

The Department maintains its ISO 14001 and OHSAS 18001 registration.

Performance Measure 6.0 – Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of Laboratory Missions

The Physics Department performs its part in helping the Laboratory achieve this measure through its participation in acquiring and developing the Laboratory business systems that meet its needs and by providing feedback to the business division for the programs in place.

The Department has set up an efficient means of reviewing acquisitions and maintaining its property that meets all laboratory requirements and incorporates additional reviews for safety and management.

Personnel in the Physics Department are our most valuable resource. Much time is devoted to recruiting and hiring excellent people, and to mentoring and assisting them in their development, both professionally and personally. The Physics Department strives to enhance its diverse population in its hiring practices to ensure global participation in creating new ideas and tools that serve the needs of researchers world-wide.

The Physics Department invites external review from subject matter experts from Laboratory and DOE resources at BNL and participates openly in reviews from external agencies. The Department values these audits as validation of our excellent programs using any corrective actions or recommendations to provide the safest and healthiest working environment in the Laboratory and DOE complex.

Performance Measure 7.0 – Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs

The Physics Department uses its resources in a most efficient and effective manner to maintain its infrastructure. We are involved in working with Laboratory Management to keep our operations in a safe and reliable condition. Our Tier I program includes inspection of infrastructure, developing any corrective actions, and relaying our needs to management.

Performance Measure 8.0 – Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems

The Physics Department participates in preparations for emergencies in concert with the Emergency Services Division. We keep them informed of our hazards and emergency needs for our people and

equipment. Hazard placards are well maintained and people are trained as local emergency coordinators to assist as necessary. Experimental Safety Reviews require the principal investigator to list any emergency preparations or responses required for their work.

DOE property and equipment are properly managed. The Department also complies with all cyber security requirements. While the Department is not directly involved with classified or sensitive information, we strive to keep all our information and materials as secure as is reasonable. The Department has appointed its Manager of ESSH&T Programs as the ISSM point of contact to ensure effectiveness of this program.

ESSH Areas Assessed

This year a comprehensive review was undertaken in the following 13 areas: Communications, Training, Leadership, Tier I Inspection Program, Work Planning, Security, Accident and Incident Management, Accelerator Test Facility (ATF) issues, Memoranda of Understanding (MOUs), Group Safety Coordinator (GSC) Program, Environmental Performance, Center for Functional Nanomaterials (CFN) issues, and Summer Student Monitoring Program. Additionally, we will work with the Condensed Matter Physics and Materials Science Department of the BES Directorate to assess our performance in handling many of their ESSH functions as outlined in MOUs established last year.

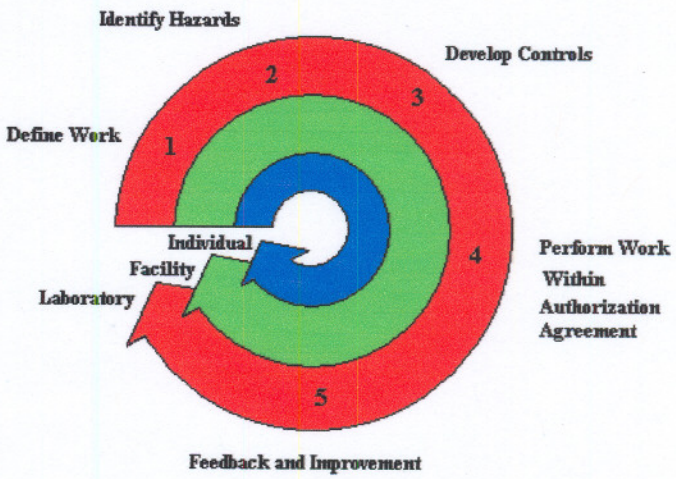
Evaluation of our OHSAS and EMS performance is addressed separately.

Overall ESSH Performance

The Physics Department's performance with respect to ESSH in FY 06 has been excellent. There was an enormous amount of time put in by the safety personnel to keep the Department in compliance, in addition to the BNL or external audits. In spite of this, many of the goals and objectives have been accomplished with few incidents and a DART rate of 0.35.

Integrated Safety Management

The Physics Department has embraced the core functions of Integrated Safety Management (ISM) in its conduct of work planning and control for operations and experiments. The Experimental Safety Review Form is organized into sections that are aligned with the 5 core functions – Define the scope of the Work, Identify the Hazards, Develop Controls for the Hazards, Work within the approved safety envelope, and provide feedback to improve or fine tune the processes.



As a Department, we continue to assess and improve the process in response to the feedback received from the Laboratory, assessments and audits, incorporation of OHSAS, Group Safety Coordinators, and from the workers. The Physics Department has assessed how we are doing with conformance to the Seven Guiding Principles of Integrated Safety Management. These are presented below. In summary, we believe we have fully integrated ISM in our Department and are looking to continuously assessing what we are doing and to continuously improve.

SEVEN GUIDING PRINCIPLES OF INTEGRATED SAFETY MANAGEMENT

...AND HOW THE PHYSICS DEPARTMENT IMPLEMENTS THEM

Line Management Responsibility for ESSH.
Responsibilities are well documented (Physics Department Policies, SBMS, etc.)
Weekly Management discussion of safety as first item
Group Leader involvement in any incident/accident investigation
Department Management and Group Leader participation in Tier I Inspections
Department Chair directs Group Leaders to appoint a Group Safety Coordinator, and Group Leaders allow that person to spend time on ESSH issues

Clear Roles and Responsibilities
All employees have R2A2s
JTAs reviewed annually or as jobs change

Competence Commensurate with Responsibilities
Authorized Worker Lists
Users receive hands-on training (where applicable)
Workers are required to read and sign ESR or Work Permit

Balanced Priorities: on the grand scale, are the hazards being appropriately addressed?
The Department does address the hazards associated with work and recognizes its need to allocate resources to address safety, through its programs and operations.
Job Risk Assessments did not identify unknown hazards or risks

Identification of ESH Standards and Requirements
The Department identifies the SBMS for all the standards and requirements it operates under.

Hazard Controls Tailored to Work Being Performed
The Department has comprehensive SOPs and ESRs that list and describe all the hazards and provide controls for each. This is a dynamic system that changes with feedback or as experiments evolve.

Operations Authorization
For the User
- Comprehensive Check-in procedures and forms
- Site specific training by PIs (or his designee) is an individual training providing an excellent platform for interaction and evaluation of competence.
- Authorized User Lists (Electrical Workers, LO/TO, Laser Operators, ATF Linac Operators, Modulator Operators, Machine Shops, Material Handlers, MPMS, Rotating Anode)

For the Experimental Laboratory
- ESR or Work Permit that is comprehensive

For the ATF
- ATF Specific training
- SAD, ASE, COO, ATF Procedures

Details of the Assessment

The ESSH Committee Chair and the ESH Coordinators performed the initial assessment. The draft was distributed to the Group Safety Coordinators and Line Management for comment. The results are as follows.

Communications

There is a strong Line Management Commitment to safety through the discussion and review of ESSH topics at each Department Administration Meeting (usually weekly), Department Group Leader Meetings (1), Department Group Meetings (varies, depending on group), and at Department "All Hands" Meetings (4). These meetings have been enhanced with an increased safety focus, with a goal of reaching every employee. The meetings included safety issues as a principal component of discussion, always first.

The Department's ESSH Committee met 6 times to assess the performance of the Department, review radiological and environmental compliance, review and update ESSH documentation, and establish, track, and ensure the implementation of corrective actions related to the reviews and incidents. A number of ESRs were reviewed electronically not requiring a meeting since much of the work is on-going from year to year.

There were 3 Group Safety Coordinator Meetings. These meetings were solely focused on safety and provide valuable worker feedback on safety to Line Management. These discussions are very productive and help to round out the ISM cycle.

The Physics Department continues to disseminate the ESH&Q monthly newsletter to all personnel. In addition information on accidents, recalls of products, timely safety messages, and lessons learned were also distributed.

Training

The Physics Department maintained a level of 99% of required training completed for employees and 92% for guests as of 9/30/06.

All employees and guests received and reviewed their JTAs.

An area of emphasis and training was for compliance with NFPA 70E. All Physics Department electrical workers renewed their Electrical Safety I training, viewed a presentation of the SLAC arc-flash incident, and received Department specific training. Tier I Inspections and Material Handling also continue to receive additional scrutiny. The Department has locked up all cranes and one forklift, established logs, and trained users for basic rigging and the most current departmental procedures.

The Department Chair, Associate Chair, ESSH Committee Chair, and an ESH Coordinator took the Safety Observation Training. The Physics Department hosted a number of training sessions and is working with Laboratory Management to implement these concepts.

Leadership

The Department has representation on SBMS Subject Area Development Groups – Event and Issues Management, Internal Controlled Documents, Work Planning and Control for Experiments and

Operations, Lead, Electrical Safety, and Conduct of Operations. Department ESH Coordinators participate in Third Party Evaluations of various BNL Programs. Additionally, the Manager of ESSH&T Programs is the SBMS POC (Point of Contact) to ensure all relevant changes to existing Subject Areas or the development of new ones are properly reviewed and/or passed to appropriate Department members for their review.

Members of Physics Department involved in safety also have membership in the following Laboratory level committees - BNL Director's Safety Committee, PAAA Committee, Cryogenic Safety Committee, Laboratory ES&H Committee, Working with Chemicals Working Group, Training & Qualifications Steering Committee, Laser Safety Committee, Operations Security Committee, Operations Forum, and the Radiation Protection Working Group.

The Physics department recognized its Group Safety Coordinators with a 'Thank You Luncheon' again this year for the leadership they provide do in bringing safety issues to their groups and group safety issues to management. A "Thank You" plaque was given to the out-going ESSH Committee Chair.

Both ESH Coordinators received honorable mention recognition certificates from the Laboratory Management for their nomination for the Site wide Safety Steward Award.

The ESSH Committee Chair and the Manager of the ESSH&T Programs are completing the 'Facilitator' training to effectively manage investigations into any Events that may occur in the Physics Department and other Departments as needed.

Tier I Program

The Tier 1 program worked very well this year. No situations involving 'imminent danger' were discovered. Housekeeping, electrical issues, and machine tool items were the most prominent issues. Corrective Actions were assigned and tracked to completion. Responses to the corrective actions were timely. Participation was good with Department Chair, Associate Chairs, ESSH Committee Chair and members, PIs, Group Leaders, and Group Safety Coordinator participation. Additionally, the BES ALD and his assistant performed 3 walkthroughs.

OSHA Violations

An external audit of the OSHA violations assigned to the Physics Department showed that some items were not completed and some that had been closed became open again. Most were in the Central Fabrications Division's Machine Shop in Building 510. They are as follows:

The storage area over the grinding room did not have the floor load limit posted.
Welding bottles were stored on a cart in front of 220-volt switch and a 220-volt panel.
Southbend lathe #CLC 3137A was missing a chuck guard.
The Vandyck drill press had an ungrounded, two-wire light.

There is an effort to resolve these issues starting with an MOU that assigns responsibility for these items. The Physics Department will have most of the responsibility to get these violations closed.

The remaining items from the OSHA Audit belong to Plant Engineering and are included in Lab-wide lists.

ESSH Committee & Work Planning

The ESSH Committee consists of a Department of Energy Facility Representative, a member of the Physics Department's Management (a scientist), a Radiological Controls Division Technician, the Department's Environmental Compliance Representative, two ESH Coordinators, an engineer and

ESH Officer from the ATF, the Building Manager, and a project manager with a quality control background. Additionally, the Department Chair, an Associate Chair, an Acting Associate Chair, and a Radiological Controls Division Representative are informed of all issues. Finally, subject area experts and other laboratory personnel are invited as needed.

The Committee reviewed and approved all ESRs that were brought to it this year. Presentations to the Committee were made for some new and ongoing experiments that have higher risk hazards.

Work Permits have been updated in the Department for Machine Shops, Winding Machines, and the routine work performed by staff at the ATF and the Rotating Anode.

All Department Policies were reviewed. Some policies were combined, some deleted, and some reissued.

Security

To date, no new issues have been identified that need attention. Security issues and information are presented at All Hands meetings.

The Physics Department is in compliance with SECON security requirements. In particular, all laboratory and office doors are locked outside of working hours. Noncompliance reports (doors left open) have been given to the Department Chair and Group Leaders of the responsible individuals. This information will be made available for inclusion in performance evaluations.

Accident and Incident Management

There were four incidents for the fiscal year 2006 as compared to three in 2005, four in 2004, ten in 2003, and three each in 2002 and 2001. There were no ORPS or PAAA violations.

They were:

PO2006-01: Department Secretary injures knee on corner of desk (recordable)
PO2006-02: Loose wire on power supply was glowing orange
PO2006-03: Moving rug to clean up bugs in office leads to fall (recordable, DART case)
PO2006-04: Movement of detectors on roof without authorization

There were no definite trends noted for these incidents although consistent with BNL statistics for trips, falls, and office accidents. These incidents were discussed with the Department at All Hands meetings and with the GSCs.

There were 4 first aid cases this year, 2 Recordable including one Lost time case as compared to 3 (2 Recordable (R) and 1 Not Recordable (NR) in 2005, 3 in 2004 (1 R, 2 NR) and 4 in 2003 (1 R, 3 NR).

The current DART is 0.35 due to an employee hurting her ankle (one of the recordable/DART cases). The other recordable case was a knee injury on a corner of a desk.

Accelerator Test Facility Issues

The ATF underwent a "Work Observation by Senior Management" during a shutdown period beginning in June. This involved a walkthrough by DOE and BNL personnel, reviews of procedures, postings, work spaces, and interviews with relevant personnel. The ATF did exceptionally well with one finding, and one recommendation for improvement.

The dose to the area monitors was reviewed quarterly. The only concern was two areas that may reach 100 mR in a year requiring a higher level of posting. Documentation establishing one of these areas as a low occupancy area was completed. The other area is in an interlocked room, generally unoccupied when the beam is on, and presents no hazard to the public. As effort to map the radiological footprint in this area is currently underway in order to devise a scheme to lower the dose rate. It is noted that all TLDs of personnel at the ATF have no recorded dose.

Upgrades of documentation incorporating NFPA 70E has been completed.

A separate self-evaluation was conducted at the ATF with the ATF ESH Officer. The intent was to view a subset of the 13 areas of assessment specifically at the ATF (Communications, Training, Leadership, Tier I Inspection Program, Work Planning, Security, Accident and Incident Management, Memoranda of Understanding, Environmental Performance, and Summer Student Monitoring Program.)

Communications: There are good lines of communications between the ATF and the Physics Department's ESSH personnel. The ATF ESH Officer is the Group Safety Coordinator for the Accelerator Test Facility Group and is a member of the ESSH Committee. This ensures ATF representation in all ESSH activities in the Department. The ATF Group Leader includes the Manager of ESSH&T Programs on the distribution list for the weekly Engineering Meeting notes.

Training: The ESH Officer performs monthly training database and ESR audits of all ATF staff and experimenters. He also gives the Department specific training in addition to the ATF Facility training.

Leadership: ATF personnel are active members of various lab-level committees, assist in reviewing Subject Areas, lab and Department policies and procedures. ATF personnel have created and maintain their own web sites for safety, training, and other information relevant to themselves and their Users Community.

Tier I Program: ATF personnel are included in the inspection teams, self-report and correct problems found between inspections and usually complete all the corrective actions resulting from the inspections by the end of the day.

Work Planning: The ATF ESH Officer reviews all ESRs, ensures compliance with the Generic Work Permits for day-to-day ATF maintenance, machine shops, and operations. The ATF has its own Work Control Coordinator and generates job specific work permits as needed. Much of the operational procedures are governed by the Conduct of Operations, ATF Handbook, Accelerator Safety Envelope, and ATF task-specific procedures. ATF personnel consistently work within their approved work authorization.

Security: The ATF works with the Physics Department for their security. There have been no losses or security issues other than needing an occasional door-lock repair.

Accident and Incident Management: ATF Personnel work with the Department on any issues that come up. There were no incidents at the ATF this year and only 1 first aid case.

MOUs: There are no MOUs at this time. Use of a portion of Building 820 by the NSLS is working well.

Environmental Performance: There are no issues at the ATF. They have been progressive in replacing bare lead bricks with painted bricks and keep their chemicals and wastes ALARA.

Students: The ATF does host students throughout the year. The students receive a comprehensive orientation and are monitored at all times. Their ability to work independently is governed by their achievements in their areas of expertise and demonstrated record of compliance.

Memoranda of Understanding

There were eight Memorandums of Understanding that were reviewed, updated, dropped, or generated. These MOU establish the responsibilities for Work Planning and Control of Experiments and Tier I Inspections. They are:

MOU with C-AD and Chemistry for the RHIC Experiments
MOU with C-AD for the Advanced Accelerator Group's space in 901A
MOUs (2) with ITD for our use of Building 515
MOUs (2) with the CMPMS Department for their use of Building 510 space

The following are no longer needed so were allowed to expire.

MOUs (2) with the CFN for their use of space in Buildings 510 and 703

A new MOU is being established this year between the Central Fabrication Services Division and the Physics Department for their satellite shop in our building.

GSC Program

The GSCs have had increased roles this year as members of groups were involved in Job Risk Assessments.

A 'Thank-You' luncheon and meeting was held in September. The out-going Chair of the ESSH Committee was given a 'Thank You' plaque for his contributions to safety in the department over more than 10 years.

The discussions and interaction of this group are becoming more and more productive each year. There is more feedback and discussion of items on the agendas and other issues are brought up by GSCs. This is in contrast to a few years ago when there was little or no response from the GSCs.

One area of concern is the number of GSCs at the meetings. We need to schedule meetings where more GSCs are able to attend.

Environmental Performance

Physics has an outstanding record with regard to protecting the environment. Over the past few years, the waste generated has been below the projections Waste Management has provided for the Physics Department. The Department has increased awareness for proper waste disposal which has nearly eliminated personal waste (trash and items brought from home) and improper disposal of items (computer monitors, etc).

There were a number of pollution prevention projects that were completed this year. All mercury thermometers have been taken out of service and replaced with ones that do not contain mercury. More lead bricks in building 510 have been recycled and more at the ATF have been replaced with painted ones. Some vacuum pumps that contain oil have been replaced with dry pumps reducing the

oil waste generated. We have also reduced the number of chemicals in the building by 500 containers including some ozone depleting chemicals.

The Department also recycled a few thousand pounds of old electronic materials as part of the DOE recycling program.

Center for Functional Nanomaterials (CFN) issues

No CFN Operations & Safety Analysis (COSA) forms for experiments were received. Work being done for CFN has been fully covered in existing ESRs. This item will be dropped next year.

Summer Student Monitoring Program

The Physics Department recognizes the additional risk posed by inexperienced people working in areas where hazards are present. In an effort to manage this, the Physics Department's Safety & Training Office maintained a list of summer students and the ESH Coordinator met with the students as a group when they arrived. The ESH Coordinators and Building Manager specifically looked for students working in laboratories throughout the summer to make sure they were working safely. Students were reminded to wear a bicycle helmets.

Physics Department & Condensed Matter Physics / Materials Science Department Assessment

In two MOUs established last year, the Physics Department provides safety services for the CMPMS Department. Specifically, responsibilities for ESRs, Work Permits, Authorized User Lists, Web request approvals for chemicals and hazardous equipment, Radiation Generating Devices, LO/TO, FUAs, waste, training, audits, Accident/Incident Investigation, EMS, OHSAS, Self-Assessment and Evaluation, Points of Contacts, and Tier I Inspections are covered in these agreements.

In an effort to assess the performance, discuss any areas for improvement, gaps, the ESH Coordinators and the Special Assistant to the ALD for the BES Directorate met and discussed the program. We agreed the arrangement has been working very well and the MOUs have been renewed for the 2007 Fiscal Year with only a few changes. We also agreed to the following:

1. Transition OHSAS JRAs from Physics to the CMPMS Department as CMPMS reviews and reissues its JRAs.
2. Keep the EMS program included in the Physics Department's EMS, specifically as regards to Satellite Areas and Waste Management.
3. CMPMS labs will participate in the Physics Department's annual chemical audit. The CMPMS Department Chair and ESH Coordinator will assist as needed.
4. The GSC program in the Physics Department will continue to include the CMPMS GSCs, ESH Coordinator, and the Special Assistant to the ALD for the BES Directorate.
5. Work together to resolve different methods of keeping signatures of workers on the ESRs.
6. Come up with a method for moving compressed gas cylinders between floors using the elevator that keep personnel out. Methods might include:
    a. Posting the elevator doors that there is to be no occupancy when a compressed gas bottle is using the elevator,
    b. Hanging a sign on the gas bottle prohibiting riding with it,
    c. Add to JRA,
    d. Discuss with 'all hands' at a Physics Department meeting,
    e. Any combination or all of the above.

Audits

The Department was the subject of 20 BNL or external audits/assessments covering various aspects of our ESSH programs. There are no outstanding issues that need to be resolved.

10/05 – EMS/ OHSAS Internal Audit
Finding: Did not include costs in management review
11/05 – OHSAS Registration Audit
No findings – registration approved
12/05 – BURF review: email response
12/05 – EMS/OHSAS Internal Assessment
Finding: Battery terminals not taped in Universal Waste Area
1/06 – DOE-BHSO Assessment of BSA's Nuclear Safety Program
Excluded Physics after examining our source inventory – included % of nuclear facility
2/06 – EMS/OHSAS Internal Multi-topic Audit
Finding: Objectives/targets need measurable quantities
Noteworthy: Showed continual improvement by updating JRA following reportable injury
3/31 – Worker Safety and Health Required Assessment Aide
6/06 – EMS/OHSAS Surveillance Audit
No findings
6/06 – Review and Verification of the Corrective Actions associated with NTS-CH-BH-BNL-2003-0001 (Intentional Noncompliance at ATF, 2003)
Finding: Checklist not fully completed as required
6/06 – BNL IA&O Independent Assessment of ATF
Finding: Checklist not fully completed as required
Finding: Need to add information (or reference) to SAD from COO
6/06 – OSHA Verification Audit
Items that had been fixed were again out of compliance: need increased Tier 1 vigilance
8/06 – Radiological Work Controls Assessment
Bypassed Physics based on our response
9/06 – Hazardous/Radioactive/Mixed Waste Management Internal Assessment
No findings during audit: report not issued yet
9/06 – Industrial Hygiene Multiple Topic Self Assessment (Compressed Gas, LOTO, Interlocks)
Report not issued yet
Finding: Outdoor flammable gas storage area had dry leaves around cylinders
Finding: In same area, cardboard dumpster within 25 feet of cylinders
9/30 – Worker Safety and Health Required Assessment Aide

Safety Observations

The Physics Department has 4 members (Chair, Associate Chair, ESSH Committee Chair, and Manager of ESSH&T Programs) who have taken the training and hosted approximately 25 people for observations in Building 510 for the practical portion of that training. Additionally, the ALD of NPP, Manager of ESSH&T Programs in Physics, and the Associate Chair for ES&H/QA from the C-A Department have done monthly walkthroughs since then. These have proved to be fruitful and worthwhile. A number of corrective and follow-up actions have resulted from these observations.

Accomplishments - Other than those listed in the summary table

1. Managed safety for the CMPMS Department
2. Reduced amount of cadmium and lead in the Department
3. Removed more radioactive sources from the field
4. Reduced the number of sources in the Department
5. Reduced the number of gas cylinders stored in the open on the loading dock
6. Provided separation for flammable gas and oxygen bottles on the loading docks and labs.
7. Lowered the radioactive Collective Dose Goal for the Department
8. Reviewed all SOPs with the LSO for all operating lasers in the Department
9. Updated All Local Emergency plans
10. Updated 90-Day Contingency Plan
11. Completed a building wide chemical audit where all chemicals were verified as having barcodes, were in the proper location, and are being stored properly
12. Regular reviews and updates of all Authorized Worker Lists (Lasers, Machine Shop, Winding Machines, Rotating Anode, MPMS, ATF Qualified Operators, Crane, and Forklift)
13. Reviewed departmental dose records
14. Reduced amount of legacy storage
15. Improved record management
16. Hazard placards updated.
17. LOTO Audit
18. ESRs and SOPs taken on Tier Is.
19. Promoted bicycle safety to summer students

Noteworthy practices

1. The ESH Officer at the ATF performs monthly training database and ESR audits of all ATF staff and experimenters.
2. The ESH Officer at the ATF performs random TLD checks.
3. The Physics Department hosted roughly 25 individuals for the practical portion of their Safety Observation Training.

Summary Table

AREAS	GOALS	RESULTS
Communications	Dept. All-Hands Meetings	4
	ESH Committee Meetings	6
	GSC Meetings	3
	Safety as 1st subject of meetings	100%
Training (as of 9/30/05)	Employees	99% - All JTAs reviewed
	Guests	92% - All JTAs reviewed
	Safety Observation Training Course	Taken by Department Chair, Associate Chair, ESSH Committee Chair and ESH Coordinator
Leadership	Safety Subject Areas	Department participation
	Physics Department's Safety Personnel participation on Laboratory Level Committees	BNL Director's Safety Committee, PAAA Committee, Laboratory ES&H Committee, Training & Qualifications Steering Committee, Radiation Protection Working Group, Operations Forum, and the Operations Security Committee
Tier I Inspection Program	Participation	Department and Associate Chairs, ESSH Committee Chair and members, Group Leaders, PIs, Group Safety Coordinators, ECR, DOE Facility Rep., RCD Facility Support Tech., RCD Facility Support Rep.
	ESR/SOP reviews	Incorporated into Tier Is
	Corrective actions	146 CAs cited
Recognition	Individuals	Certificates of Appreciation given to outgoing ESSH Committee Chair Recognition Awards for Safety given to ESH Coordinators
Work Planning	Experiments Reviewed and approved	PIs and workers are bringing changes to the ESRC without prompting
	ESR & SOP signature audits	Not completed
Security	Losses or other issues	No losses, # of doors left unlocked has been reduced
Accident and Incident Mgmt.	Awareness	Discussed incidents at All Hands and GSC meetings, ES&H Monthly Summary (from ESH&Q Directorate) distributed to entire Department, Lessons Learned and other DOE site incidents distributed as appropriate
	# Incidents	4
	# Reportable Incidents	None
	# Recordable accidents	2 with 1 being a lost time accident
	DART Rate	0.35
	Line Management Involvement	In weekly management meetings, Group Leaders involved in write-ups and reporting to ESSH Committee
Accelerator Test Facility Issues	ALARA	Reviewed all dose rates for areas and personnel – performing studies to reduce further
	Streamlined procedure for ESRs	Completed for ATF standard experiments
	ESH	2 weekly meetings with safety as a component including ATF, Physics department, and BNL safety and training issues and lessons learned
MOUs	Create, drop, review, or reissue	8 complete
GSC Program	Quarterly meetings	3 Meetings held
Environmental Performance	Pollution Prevention	Replaced a more lead bricks at ATF with painted ones Reduced amount of lead and cadmium Replaced oil containing pumps with dry ones Removed 500 chemical containers from building
	Accidents/Incidents	None
CFN Issues	Identification of problems	None
Summer Students	Monitoring	Weekly walkthrough by ESH Coordinators and Building Manager to look for students working in labs.

Incomplete Recommendations from FY 2006 – These are in process but have not yet been accomplished

Perform a signature audit of ESRs in the field.

Completed Recommendations from FY 2006

1. The Physics Department completed ISO 18001 registration.

2. Made a smooth transition for CMPMS Department eventual take over of all their safety and Tier I responsibilities from the Physics Department that leaves no gaps or lapses in ESSH or other programs.

3. Improved the attendance at GSC Meetings.

4. Improved training percentages for guests.

5. Improved tracking and trending of Tier I violations.

6. The Physics Department was audited for its Corrective Action Management by reviewing some of its corrective actions 12-18 months after closure to evaluate their effectiveness.

7. We agreed that the ESR process for the ATF experiments we have in place is working well and no further streamlining is necessary.

8. The Physics Department conducted a separate self-evaluation of the ATF covering infrastructure, day-to-day activities, experiments, and needs.

Recommendations/Goals for FY 2007

1. More emphasis on experimental work that includes field observations, ESR, and laser SOP signature audits.

2. Work for a smooth transition for CMPMS Department eventual take over of all their safety and Tier I responsibilities from the Physics Department that leaves no gaps or lapses in ESSH or other programs.

3. The Physics Department will improve its Corrective Action Management by reviewing more of its corrective actions 12-18 months after closure to evaluate their effectiveness.

4. Prepare Department for 10CFR851 Rule.

5. Prepare Department for ISM Audit.

Acronyms

ALARA	As Low As Reasonably Achievable
ALD	Associate Laboratory Director
ASE	Accelerator Safety Envelope
ATF	Accelerator Test Facility
ATS	Action Tracking System
BES	Basic Energy Sciences
BNL	Brookhaven national Laboratory
BSA	Brookhaven Science Associates
BTMS	Brookhaven Training Management System
BURF	Beryllium Use Review Form
C-AD	Collider-Accelerator Department
CA	Corrective Action
CFN	Center for Functional Nanomaterials
CMP	Condensed Matter Physics
CMPMS	Condensed Matter Physics & Materials Science
CMPMSD	Condensed Matter Physics & Materials Science Department
COO	Conduct of Operations
COSA	CFN Operations and Safety Awareness
DART	Days Away, Restricted, or Transferred
DEC	Department of Environmental Compliance
DER	Department EMS Representative (R. Gill)
DOE	Department of Energy
DOE-BHSO	Department of Energy-Brookhaven Site Office
EAC	Environmental Assessment Committee (R. Gill and K. Klaus)
ECR	Environmental Compliance Representative (K. Klaus)
EMS	Environmental Management System
ESH (ES&H)	Environment, Safety, and Health
ESH&Q	Environment, Safety, Health & Quality
ESR	Experimental Safety Review
ESRC	Experimental Safety Review Coordinator
ESSH	Environment, Safety, Security, and Health
ESSH&T	Environment, Safety, Security, Health, and Training
EST	Environment, Safety, & Training
EWMSD	Environmental & Waste Management Services Division
FY	Fiscl Tear
GSC	Group Safety Coordinator (See GSC list)
IA&O	Internal Audit and Oversight
ISM	Integrated Safety Management
ISSM	Integrated Safeguards and Security Management
ISO	Independent Standards Organization
ITD	Information Technology Division
JTA	Job Training Assessment
LOTO	Lock Out Tag Out
LSO	Laser Safety Officer
MOU	Memorandum of Understanding
MPMS	Magnetic Properties Measurement System
NFPA	National Fire Protection Act
NPP	Nuclear and Particle Physics
NRTL	Nationally Recognized Testing Laboratory

NSLS	National Synchrotron Light Source
NYSDEC	New York State Department of Environmental Compliance
ODS	Ozone Depleting Substances
OHSAS	Occupational Health & Safety Assessment Series
OPSEC	Operations Security
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
PAAA	Price-Anderson Amendment Act
PCB	Polychlorinated biphenyl
PI	Principal Investigator
POC	Point of Contact
R2A2	Roles, Responsibilities, Authorities, and Accountabilities
R&D	Research and Development
RCD	Radiological Controls Division
RCRA	Resource Conservation and Recovery Act
RF	Radio Frequency
RGD	Radiation Generating Device
RHIC	Relativistic Heavy Ion Collider
SAP	Self Assessment Plan
SBMS	Standards Based Management System
SECON	Security Conditions
SLAC	Stanford Linear Accelerator
SOP	Standard Operating Procedures
TLD	Thermoluminescent Dosimeter